Ministry of the Environment | Ministère de l'Environment | September 2003

Green Facts

Important facts about water well construction..

If you are planning to have a water well constructed on your property, there are some important facts you should know. In 2003, Ontario updated its regulatory requirements for water well siting, construction, maintenance and abandonment to better protect well users and groundwater resources.

Ontario's Well Regulation (Reg. 903 under the Ontario Water Resources Act) provides for the licensing of well contractors and well technicians by the Ministry of the Environment, and sets minimum construction standards for all wells.

A well contractor licence requires that well contractors be insured against liability claims, employ only licensed well technicians, and comply with all requirements of the Regulation 903.

A well technician's licence is required for anyone working on well construction. For your protection, you should ask to see both the well contractor licence and well technician licence before you determine which well contractor to hire to work on your well.

Construction requirements - water supply wells

There are a number of detailed requirements and minimum well construction standards in Regulation 903. They cover such things as casing, grouting, sealing, and pump testing of the well.

The well contractor is responsible for all work and costs to prevent any uncontrolled flow of water from a well. A written contract with the owner can release the well contractor from responsibility for cost, but completion of the work by the well contractor is mandatory.
Other construction requirements include:

- A new well must be at least 15 metres from any source of pollution if the well casing is watertight and is at least 6 metres in length below ground level.
- Any other new well that does not have watertight casing to at least 6 metres below ground level must have be at least 30 metres away from a source of pollution.
- A well must be constructed so that surface drainage will not pond in the vicinity of the well.
- During construction, steps musts be taken to protect the well against the entry of surface water and foreign material.
- A new well must be chlorinated at least once to a residual concentration of 50 milligrams of chlorine per litre of water for a minimum of 12 hours.
- A well must be constructed in such a way that there is no break-out of flowing water from around the well bore. A device is required on the well casing to permit stoppage of flow from the well both inside and outside of the well casing.
- All casing materials must be new and the top of the casing must be a minimum of 40 cm above the ground surface. Well pits are not permitted on new wells. Casing in a drilled well must be a minimum of six metres in length unless the only useful aquifer of water-bearing zone is shallower. The hole in the ground for the well must be made at least 7.6 cm wider than the well casing to a minimum depth of 6 m. This space must be completely filled with a suitable sealant, such as bentonite.

Following construction, the well contractor must:

- provide the well owner with a one-litre sample of well water for visual examination,
- measure the well depth in the presence of the owner, and
- notify the well owner if there is sand in the well, if mineralized water or natural gas is encountered, and provide the well owner with an information package. This package will be available in mid October 2003.

Ontario

The well contractor is required to continuously pump water from the well for at least one hour and to measure and record on a Well Record. The well contractor must record the rate at which water is pumped from the well, measure the water levels in the well during pumping and then measure the water levels for at least one hour after the pumping has stopped. This information must be recorded in the Well Record. The well contractor will then recommend a pump setting, depth and pumping rate. The new Well Record will be available in mid October 2003. During the transition to this date the existing Well Record form will continue to be used.

Within two weeks of completion of the well, the well contractor must deliver a copy of the Well Record to the owner. This is the official document filed with the Ministry of the Environment that gives the well's location and the details about its original construction and test pumping rate.

The well contractor is also required to place a stainless steel well tag obtained from the Ministry of the Environment on the well. Well tags will be available in mid October 2003.

Construction requirements - non-water supply wells (test holes, dewatering wells)

Regulation 903 applies to test holes and dewatering wells. There are, however, a number of regulatory exemptions and additional provisions that also apply to some of these non-water supply wells. Please refer to the complete regulation for specific requirements.

Well contamination

One of the common causes of well contamination is failure to seal properly the annular space (the space between the well casing and the hole in the ground). One of the most common materials used for sealing this space is a bentonite slurry.

The connection where the waterline passes through the side of the well casing must be watertight if it is made below the ground surface. The method of connecting varies from a commercially manufactured pitless adaptor or sanitary sell seal to durable sealing materials or a T-joint for sand points.

Grouting material must also extend a minimum 0.5 metres from the well casing into the trench excavation that is created to bury the waterline. Where a pump connection is made through the top of a casing in a drilled well, a commercially manufactured sanitary well seal is required.

Most properly constructed wells require ventilation to allow air into the well casing for proper operation of the well and pump. It is important to ensure that wells that emit natural gas are vented to the outside of buildings to avoid the risk of explosion, fire or other safety risks.

Maintenance

Once the well is constructed, it is the well owner's responsibility to maintain it in a manner that will prevent the entry of surface water or other foreign materials that are likely to contaminate the well and the aquifer.

Abandoning a well

The Wells Regulation contains provisions for abandoning a well. Wells must be sealed if they are dry, discontinued before completion, or not being properly maintained. Wells that produce unpotable, salty, sulphurous or mineralized water must be abandoned.

Wells may also have to be abandoned if it is determined that natural gas poses a potential hazard or if well construction standards have not been followed.

Abandoned wells are required to be plugged with concrete or other suitable materials. In most cases, a licenced well contractor should be retained because selecting the correct plugging materials, placing them down the well adjacent to the correct subsurface formations, casing removal and other considerations may be beyond most home owners' abilities.

Additional information sources

You can obtain a copy of Regulation 903 from the e-Laws Web site at www.e-laws.gov.on.ca or by calling Publications Ontario at 1-800-668-9938. The following information sheets are available from the Ministry of the Environment's Web site or by calling its Public Information Centre:

- The protection of water quality in drilled wells
- The protection of water quality in jetted or driven point wells
- The protection of water quality in bored and dug wells

For further information about wells contact your nearest Ministry of the Environment office listed in the blue pages of your telephone directory. You can also call the ministry's Public Information Centre at 1-800-565-4923 or (416) 325-4000. The ministry's web site is at www.ene.gov.on.ca